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The Economic Consequences of The Chilean Democratic Transition

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Abstract

This article uses tools from the macroeconomic time series literature to study the economic effects of the post-dictatorship Chilean democratic transition. Using autoregressive vectors (VAR) the dynamic effects of the "democratic shock" that occurred in Chile during the years 1988-89 are estimated, providing relevant empirical evidence for the study of the historical relationships between economic growth, inequality and type of political regime. It is found that this democratic improvement resulted in a higher long-term growth rate of GDP per capita (3% above the baseline scenario) and a slight decrease in inequality of 0.3-0.4 Gini points. In line with the related literature, betterments were observed in the variables associated with human and physical capital. The effects were not immediate, which raises the dilemma of the political economy of transitions: in the Chilean case, the democratic shock of 1988-89 took 3 years to have a positive impact on the growth rate of GDP per capita and the total effect peaked after 7 years.

Key words: *Political Regimes, Democratic transitions, Chile*

JEL Classification: *C32, O11, O43, P16*

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1. *Introduction*

This article uses a time series approach to study the long-term economic effects triggered by changes in the type of political regime. The case studied corresponds to the post-dictatorship Chilean democratic transition, with an approach that combines elements of historical narrative with tools from the macroeconomic literature of Autoregressive Vectors (VAR).

When the differences between rich countries and poor and middle-income countries are observed, we see that the former exhibit higher levels of productivity and a workforce with better education and health, as well as more and better machines and equipment and innovation capacities. And it is often believed that in these variables lies the explanation for the determinants of growth. But the really interesting question, as raised by Acemoglu et al. (2014), is about the ultimate conditions that make possible the highest levels of innovation and Research and Development, as well as human, social and physical capital. The answer from the neo-institutionalist literature is that institutions, the rules of the game or restrictions that we design as a society are what define the incentives that shape decisions regarding innovation, the accumulation of knowledge, and the accumulation of human and physical capital. A part of this literature has studied how a specific institution - democracy - influences economic performance.

This work is inserted precisely in that line of research. With the objective of testing some of the neo-institutionalist hypotheses, this article uses tools from the macroeconomic literature of Autoregressive Vectors (VAR) to estimate the economic effects of the Chilean democratic transition after the Pinochet dictatorship. Thus, the first objective is to show a novel application of the recent availability of long-term series for a large set of variables of interest.

Chile has interesting characteristics for a study of this kind. The first is the availability of data. The recent versions of Polity IV and the Maddison database (v.2018) allow us to have long series of variables associated with the level of democracy and the growth rate of GDP per capita, respectively. Added to this work is the series constructed by Rodríguez-Weber (2017) who estimates, under different methods, a series for the long-term Gini coefficient for Chile. Finally, the existence of the project "La República en cifras" (Díaz et al. 2016) of the CliometricsLab of the Universidad Católica de Chile allows for making robustness analyzes of the estimated models, in addition to opening up new lines of research.

Second, the series associated with the democratic variable exhibits a level of variability that allows for such an investigation. In other words, the history of Chile post '73 has

exhibited changes of relevant magnitude in the indicator that captures the type of political regime.

Third, the characteristics of its democratic transition are interesting to address the problem of commitment and the behavior of the elites in the face of "revolutionary threats." For example, according to Acemoglu (2008), by making democracy less threatening to the interests of the elites, the democratization process is facilitated:

"If a nondemocratic regime or elite can design or manipulate the institutions of democracy so as to guarantee that radical majoritarian policies will not be adopted, then democracy becomes less threatening to the interests of the elites… For instance, when democracy is less threatening, it will be less attractive to use repression to avoid it. Thus, Pinochet's constitution, according to our framework, facilitated democratization in Chile."

In Chile, the so-called "*commitment problem*" was solved through a series of mechanisms and compromises: A first level corresponds to the rigid legal structure established in the 1980 Constitution. The same happened in various sectoral laws through the so-called "tie laws" (*"leyes de amarre"*) dictated during the last days of the regime. In practice, a situation of veto power was granted to a minority through gerrymandering, the over-representation of this minority due to the bi-nominal system and the high quorums required for key laws, and finally the threat of a military veto with respect to democratic decisions (see Acemoglu 2008, Londregan 2000 and Siavelis 2000).

Having long-term data allows us to use the time series approach, and to characterize the dynamic effects of "democratic shocks" on the economic system in line with, the research program that studies the effects of monetary policy on the economy. Thus, it is possible to explore the consequences of unexpected changes in a given "policy variable". From the econometric point of view, finally, this approach is justified, since focusing on a single economic system makes it possible a better control for the characteristics of unobservable variables that in general can produce biases in cross-section studies.

The main results of the estimated central scenario show that the democratic shock of '88-'89 resulted in a higher long-term growth rate of GDP per capita of a magnitude of 3 points above the baseline scenario, and a slight decrease in inequality of 0.3-0.4 points of the Gini.

The rest of the article is structured as follows. Section 2 presents the arguments for and against democracy, as well as recent empirical evidence. Section 3 gives a brief historical overview of the Chilean democratic transition, highlighting the uncertainty regarding the outcome of the plebiscite and the subsequent recognition of the results. Section 4 shows

the main data used, as well as the definitions and their sources. Section 5 shows the econometric strategy used, the main results and the robustness analyzes carried out and investigates some of the possible channels through which democracy affects economic results. Section 6 presents the conclusions.

2. *The arguments and the evidence*

"*No famine has ever taken place in the history of the world in a functional democracy*", stated Amartya Sen in his 1999 book, "Development as Freedom". Two decades earlier, in "Poverty and Famines: An Essay on Rights and Deprivation", Sen had already identified inequitable distribution mechanisms rather than a lack of food as the main cause of famines. Famines are not the result of scarcity. They are the result of the effective priorities that a society expresses and that is where democracy plays a fundamental role.

The impact of a democratic improvement on economic growth is still disputed. A 2009 New York Times columnist argued that there were advantages of a one-party regime – which is by definition undemocratic –due to its ability to enforce decisions that can be politically costly but fundamental to the progress of a modern economy. Thus, a single party can make costly investments in the short term that would be difficult to implement in a democratic environment.

The defenders of this vision conclude that a dictatorship has a greater capacity to force savings - reducing current consumption - and thus promote growth. Rao (1984) cited in Przeworski and Limongi (1993) synthesizes it like this:

"*Economic development is a process for which huge investments in personnel and material are required. Such investment programs imply cuts in current consumption that would be painful at the low levels of living that exist in almost all developing societies. Governments must resort to strong measures and they enforce them with an iron hand in order to marshal the surpluses needed for investment. If such measures were put to a popular vote, they would surely be defeated. No political party can hope to win a democratic election on a platform of current sacrifices for a bright future*."

The counterpart is that democracy hinders growth since it is not able to contain the pressures to increase current consumption, thus reducing the capacity to save and invest.

On the opposite side, Persson and Tabellini (2009) coined the idea of "democratic capital" suggesting the existence of a virtuous circle where the accumulation of physical capital and democratic capital positively feed each other, facilitating the process of economic development along with a consolidation of democratic institutions. Along the same lines is the argument that democracy enhances the ability to minimize the veto power of a

minority, which in its search for rents (Rajan, 2009) can end up influencing the political system and shaping the economic environment in its favor. In this way, the elite prevents the entry of new economic actors, which slows down the growth of the economy and favors the concentration of income. Acemoglu (2008) shows the possible sources of inefficiency derived from excessive power on the part of what he calls the "oligarchic elite".

Democracy then operates as a mechanism that helps to solve the problems of political economy present in the elaboration of public policies. In the game of political counterweights, the provision of evidence and the possibility of openly disagreeing with any public issue lies part of the power of democracy, which allows, on the one hand, for having a process of permanent improvement in public policies and, on the other, gives them legitimacy. Democracy institutionalizes negotiation procedures between parties with dissimilar views with the expectation that the result of these procedures will turn out to be more effective and efficient in resolving conflicts, with the ability to find better solutions than those that would be imposed from above, in a dictatorial or broadly speaking, autocratic regime.

2.1 The arguments in the Chilean case

A BBC report (2019) asked *"Is Chile's economic miracle really a Pinochet inheritance? Who is the author of the Chilean economic miracle?"*

Ffrench-Davis (2014) highlights that the economic results were meager compared to other periods in Chile:"*The Pinochet dictatorship was not successful economically, but rather mediocre and disastrous in terms of distribution*". He also lists the restrictions on labor rights and the accentuated precariousness of the labour job market. The gap between rich and poor increased in the period, emphasizing the poor growth of the minimum wage. He also questions the benefits of the economic management of the dictatorship, recalling how "… in 1983, the free market champions allocated 35% of GDP to bail out private banks, for which they drastically reduce pensions, family allowances, and salaries of public employees. , contributions to the health ministry, teachers' salaries and cut investment in infrastructure ". He concludes that "the net balance of the neo-liberal reforms, in the end, is not pro-development but rather pro-speculation and pro-inequality."

There was then no "economic miracle" in the Pinochet era. What took place was a risky deregulation and hyperexpansion of the financial sector, which left Chile highly exposed to reversals of international flows.

In the same report cited, in regard to the policies put in place by the governments of the concertation, an academic and high level former official of the said coalition points out:

"*The democratic governments steadily increased the role of the state, particularly in the areas of infrastructure, social policies, consumer protection, health and education. At the end of the dictatorship in Chile there were no universal health insurance, unemployment insurance, free education superior, nor solidarity pillars in the pension system* ".

Noah Smith, a columnist for the international news agency Bloomberg, summed up the discussion in a tweet in November 2018: *"The annualized growth of real GDP per capita for Chile under Pinochet (1973-1990) was 1.6%. The annualized per capita real GDP growth for Chile in the 17 years after Pinochet (1990-2007) was 4.36%. Pinochet is way overrated".*

Beyond the averages and arguments, the difficulty lies in making an evaluation that controls for as many factors as possible, considering, for example, international crises, variations in the terms of trade and the interaction with other socio-economic variables. This work provides an empirically-based answer to explain the post-dictatorship economic growth. The results show that the notorious democratic improvement was the fundamental causal variable that explains the economic performance for the said period.

2.2 A critical review of the empirical evidence

There are various approaches to studying the effects of institutions on economic performance. Most studies correspond to cross-sectional regressions at the level of countries or local areas and address the inherent endogeneity problems in different ways, devising and proposing various instruments to find plausibly exogenous variations in the institutional variable. One of the most recent studies to use this strategy, (Acemoglu et al. (2015) and Acemoglu et al. (2019)), explores the relationships between democracy, growth and inequality. The latter work, in addition to critically pointing out the shortcomings of previous studies, offers a set of evidence with various methodologies and identification strategies, concluding that "democracy does cause growth."

From the perspective of a time-series methodological approach, it is possible to raise some general criticisms of these studies. First, they do not allow us to study the possible bi-directional relationships between economic and political variables. (López, 2020). It is feasible to think that unexpected changes in the growth rate for a certain period - for example, a sharp drop - are transmitted through political pressure, even in a dictatorial regime. The same occurs with the relationship between inequality and the political regime.

Chang (2011) raises several criticisms of this type of literature. He also states that the bulk of this literature does not consider the possibility that causality goes from economic development to institutions. This also points to the risk of assuming linear functional forms, ruling out non-monotonic or time-varying effects. Finally, he is critical of the excessive weight that cross-sectional studies have, arguing in favor of the use of time series with a coherent historical perspective. This work is inserted precisely in this debate, taking into account the aforementioned criticisms and testing them in a novel way for the case of a specific economy.

2.3 The contribution of this work

This article is eminently empirical. It does not seek to give theoretical explanations of the results found. There is abundant theory about the effects and channels through which institutions - particularly democracy - affect different economic paths.

As mentioned, much of the evidence for the effects of institutions on economic performance has been provided by cross-sectional studies, with different degrees of refinement. Discontinuous regression and propensity score matching techniques have also been used to evaluate the effects of institutional and micro-institutional changes.

Each tool exhibits pros and cons and the choice will depend on the problem and the question to be answered. The strategy used in this work is novel in terms of the relationships it analyzes, but it is analogous to the study of the effects of monetary policy (or technological shocks) on economic activity or other variables. In this case, the object of study is the dynamic effects that trigger what is called a democratic shock to economic performance.

Using a time-series approach, a simple methodological proposal is presented to test some of the predictions of the neo-institutionalist literature. The time-series approach also makes it possible to link and reconcile the historical analysis with the economic one, since it provides empirical evidence that, if well interpreted, becomes valuable historical information.

Thanks to the information available for the Chilean case, it is possible to estimate more flexible specifications of the VAR, including variables associated with human capital, physical capital, inflation and fiscal policy. The results are robust to these specifications even when copper production is subtracted from GDP and when the terms of trade are included, a variable usually associated with the Chilean economic cycle.

3. The historical context of the 1988 Plebiscite: An uncertain result

The 1980 Constitution, approved through a questioned plebiscite during the dictatorship, contemplated the future holding of a consultation regarding the continuity of the government. The person proposed as a candidate by the government for the said continuity could be approved or rejected. The candidate was the commander-in-chief of the army and head of the governing board, Augusto Pinochet.

If the "Yes" option won, the president-elect would assume office for a period of eight years, from March 11, 1989, the same day that the previous term was to end, until March 11, 1997. It also contemplated the call to general elections of senators and deputies.

If the "No" option won, Augusto Pinochet's presidential term would be extended for one more year, until March 11, 1990, together with the functions of the Governing Board, and presidential and parliamentary elections would be called.

The outcome of the October 1988 election was extremely uncertain. Table 1 shows the high variability in the predictions of the surveys. One explanation for this is that fear and mistrust made these measurement tools less reliable. It stands out that the number who were undecided in these surveys fluctuated between 11% and 40%.

Added to this predictive uncertainty was the opaque handling of information on the same day as the historic consultation. At 7:30 p.m. on October 5, the first official report was delivered: the "Yes" obtained 57.36% compared to 40.54% for the "No".

At 10:00 pm, a new calculation was delivered: «Yes», 51.3% and «No», 46.5%. It was further announced that the next count would be delivered at 11:15 p.m. The television channels stopped covering the news and programmed cartoons. "Television broadcast cartoons on the tensest day in the country in decades," explained the head of the NO campaign years later.

There was no official recognition until the early hours of October 6. On his way to the Palacio de La Moneda, the Commander in Chief of the Air Force, Fernando Matthei, pointed out: "I am quite clear that No has won, but we are calm." According to Arancibia and de la Maza (2003), at the said meeting, Pinochet gave the members of the Military Government Junta a decree by which he would assume all power not to recognize the results of the plebiscite. This would have infuriated the members of the Board, especially Matthei, who claims that he tore the decree document into pieces with his bare hands.

Thus, the result of the election was closest to flipping a coin in terms of the political future.

At 2:00 in the morning ,the official counts were announced: "Yes" obtained 43% compared to 54.7% for "No".

According to a CEP survey carried out at that time, among the causes that motivated the majority to vote "NO" the bad economic situation prevailed (72%) —more than human rights (57%) due to the 20% unemployment that existed during the military dictatorship — as well as the poor distribution of income, which would explain why these arguments were made amid the apparent economic boom.

4. *Data, definitions and sources*

The type of political regime, which can be understood as the degree of democracy that a country exhibits, is captured through the Polity2 variable, obtained from the Polity IV project database.

The Polity IV index consists of the measurement of a series of components that approximate or register the most important characteristics associated with 3 dimensions: an impersonal or non-discretionary executive power, the existence of (formal) restrictions on the executive power and the level of competitiveness that is observable in the political realm.

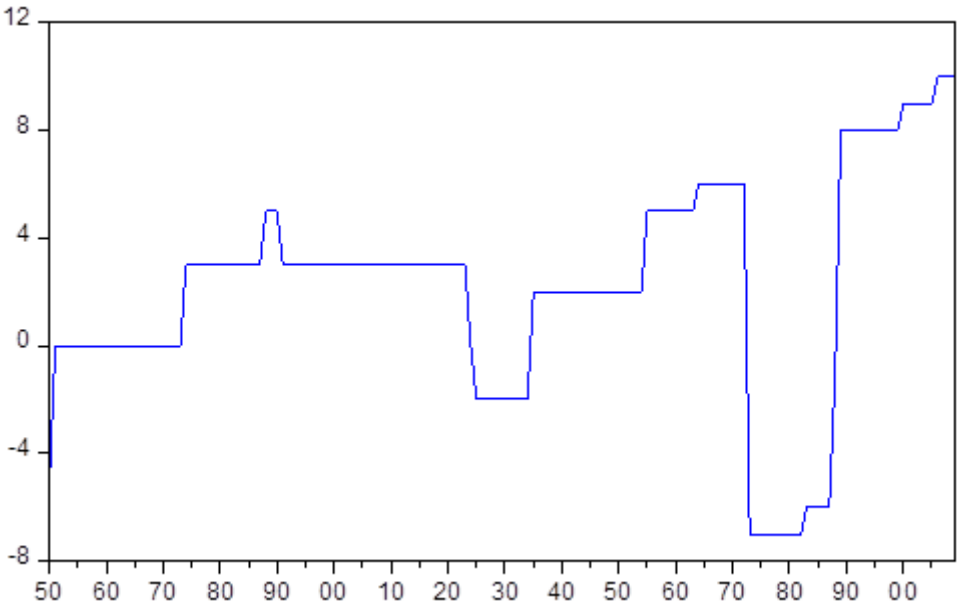
For each country and year, a "Polity Score" is determined with a range that goes from -10 to +10. The ranges and respective types of political institutionality are shown in table 1. The evolution over time of the Polity Score for the Chilean case (1850-2009) is shown in Figure 1.

TABLE 1

Polity score, definition and characterization

Range	Political regime	Characterization
[-10, -6]	Autocracies	An authoritarian regime, characterized by the concentration of all power in a dictator or despot. Its decisions are not subject to any type of legal restrictions or mechanisms of popular representation.
[-5, 5]	Annocracies	A set of government systems that can be defined as "part democracy" and "part dictatorship". It combines at different levels democratic aspects with autocratic aspects.
[6, 10]	Democracies	A Government system that allows citizens to express their political preferences. The main executive and legislative authorities are elected by individuals.

FIGURE 1. Polity Score – Chile (1850-2009)



The (log) of GDP per capita, its growth rate, as well as other statistics of interest for the said variable, are shown in Figures 2, 3 and 4 respectively.

The data for the GDP of the respective countries were obtained from the Maddison Project Database, version 2018.

FIGURE 2. (Log) of GDP per capita – Chile (1850 – 2009)

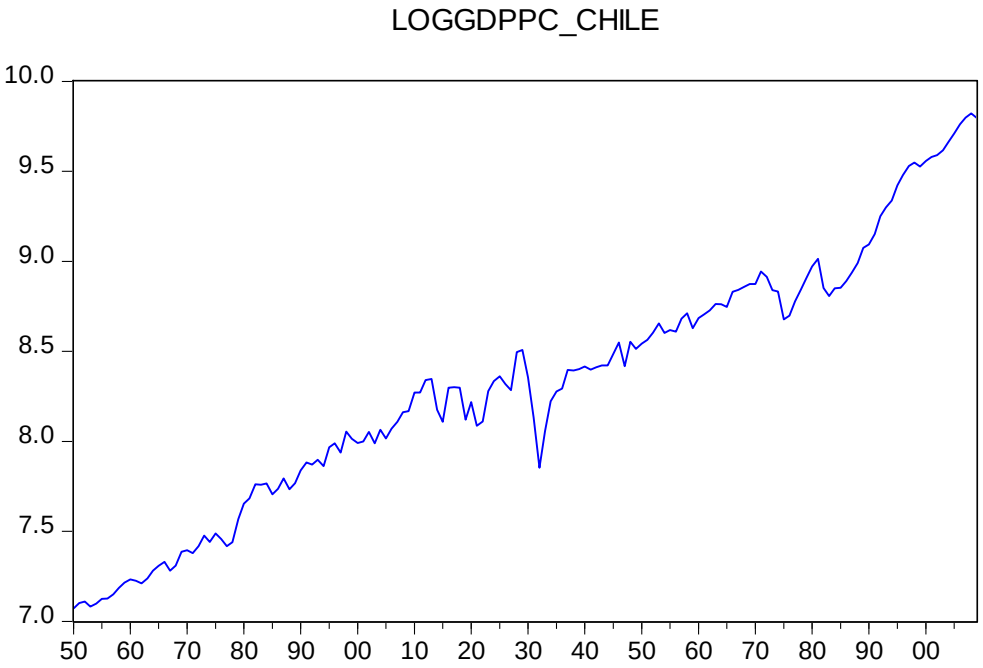


FIGURE 3.GDP per capita growth rate, Chile (1850-2009)

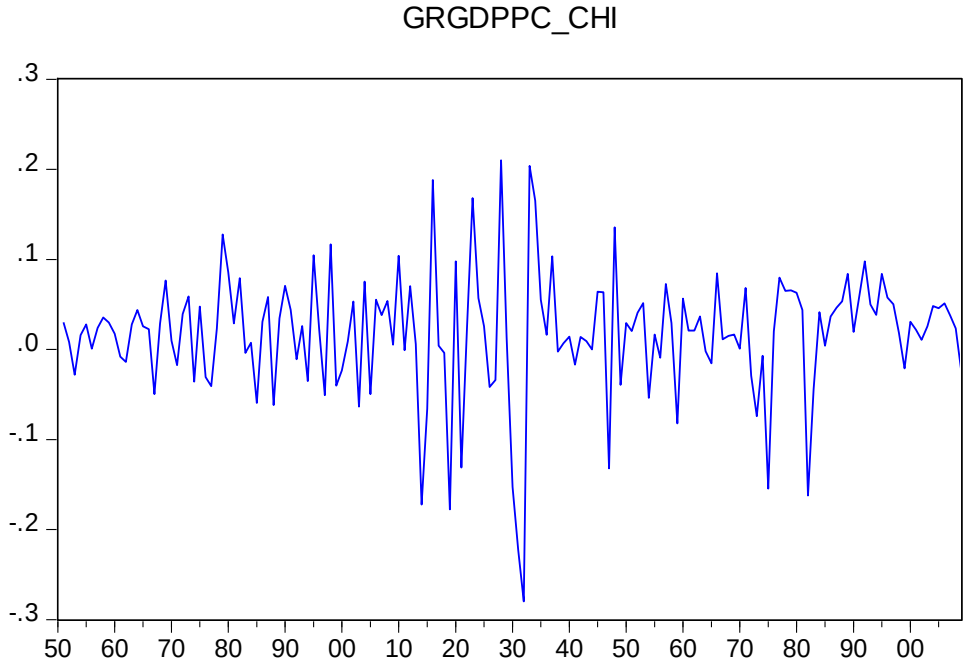
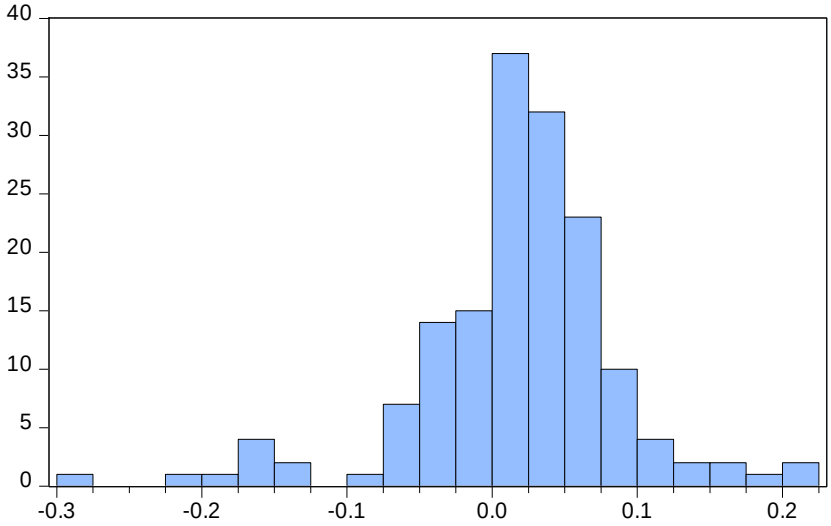
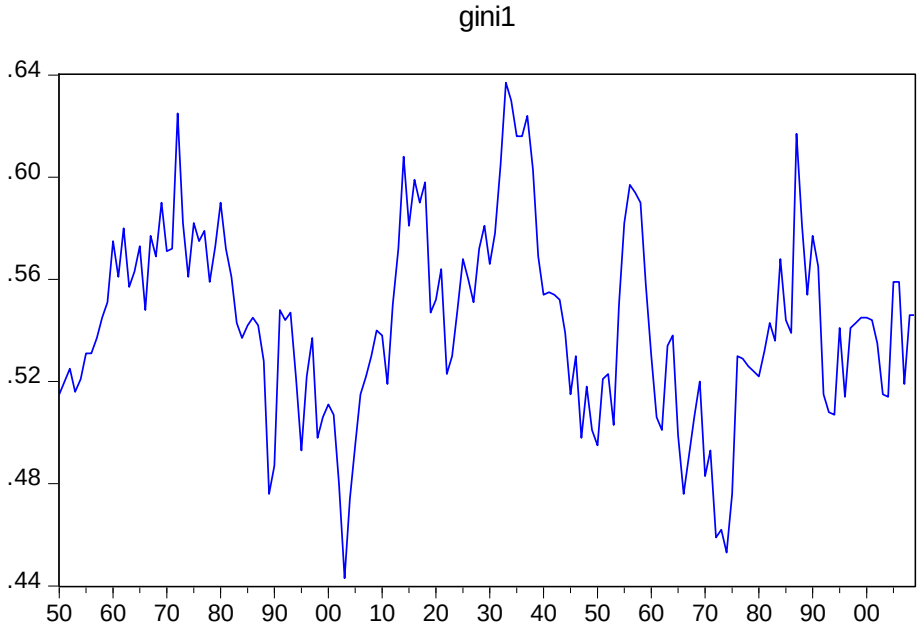


FIGURE 4. GDP per capita growth rate, Chile (1850-2009) - histogram and statistics of interest



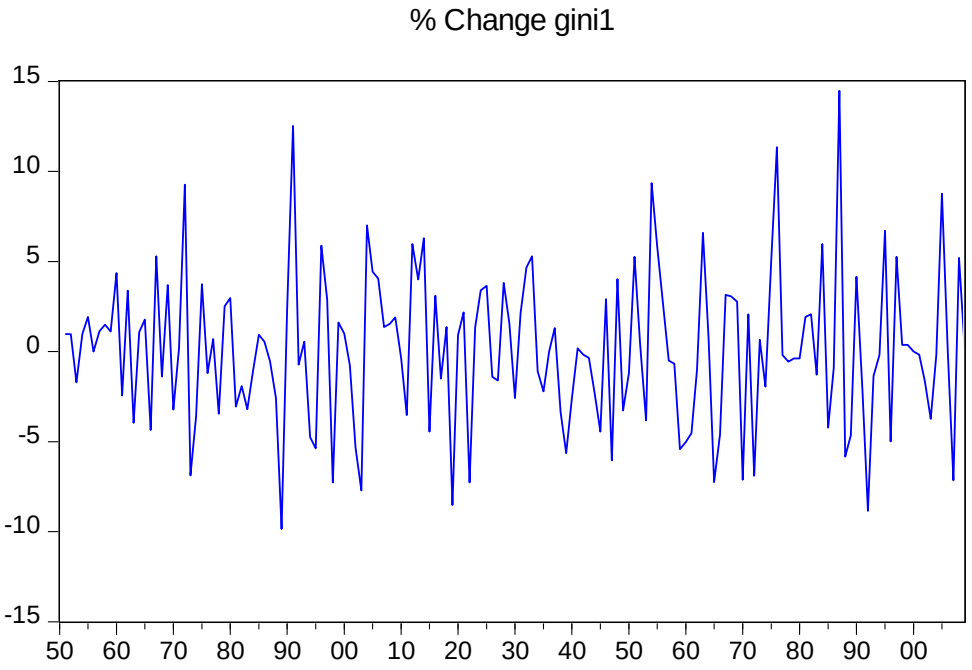
The Gini coefficient obtained from Rodríguez Weber (2017) and its variation are presented in Figures 5 and 6:

FIGURE 5. Gini coefficient, Chile (1850 – 2009)



Source: Rodríguez Weber (2017)

FIGURE 6.Change (%) of the Gini Coefficient, Chile (1850 – 2009)



4.1 A note regarding inequality in Chile

According to Rodríguez Weber (2017), in Chile there has always been an economic elite capable of concentrating a significant part of capital and income. This elite has been able to renew itself in its composition and sources of income, with periods of greater economic concentration than others, "but always a small number of families have owned or controlled the most profitable productive assets"

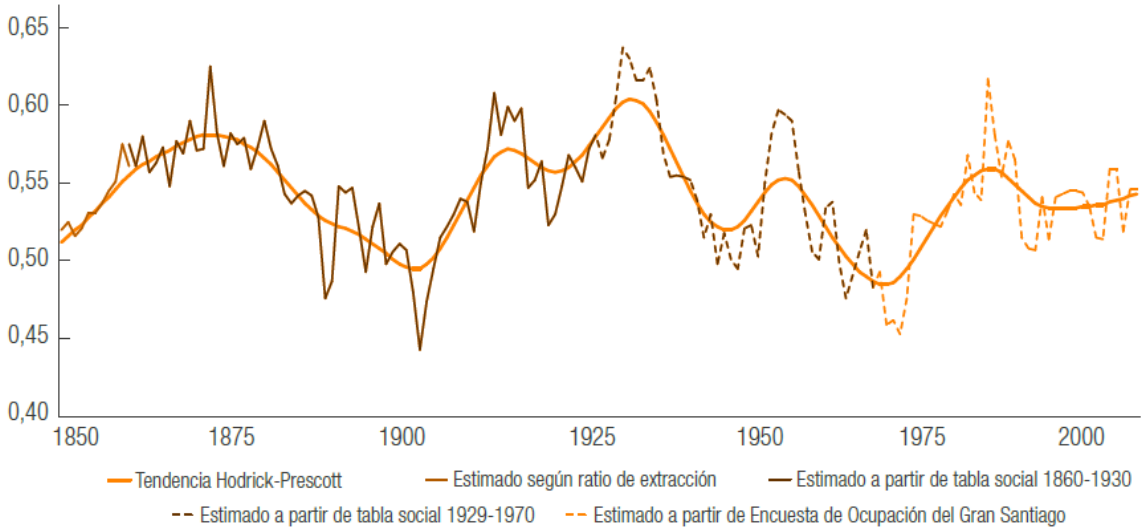
As can be seen in Figure 7, the average inequality in the country has remained relatively stable since the mid-nineteenth century. In the very long term, there is no appreciable upward or downward trend. Around the average, of approximately 0.53, there have been large oscillations in which inequality increases or decreases due to both economic and commercial factors as well as political economy or geopolitical factors (Rodríguez Weber, 2017). Furthermore, comparing the Gini indices estimated for various countries in the period prior to the start of their respective industrialization processes, Chile appears to have been a country of great inequality from very early on in its development process (Milanovic, Lindert and Williamson, 2011). All in all, the oscillations show that the levels of inequality are likely to change in the medium and long term.

This stationarity characteristic has empirical support: the long-term Gini coefficient series estimated by Rodríguez Weber and used in the present work is statistically stationary; that is to say, its mean and variance do not change as a function of time. This characteristic of the series in turn is confirmed by the historical narrative from the perspective of the "Political Economy of Inequality" and has historical support in the description of the behavior of the Chilean right in the political sphere described in the book "With the Reins of Power" (Correa Sutil, 2005)

This description is framed with an analysis of inequality along the lines of the Ricardian tradition. As Palma (2020) points out, inequality must be understood as "the result of the political articulation of the distributive conflict - in which history, politics and institutions are what really matter". Similarly, Rodríguez Weber (2017) reminds us that "the political side of the economy is always present, especially when we talk about inequality," emphasizing the importance of the institutional environment in which the market is framed and, more generally, the asymmetric power relations between those who exchange.

The degree of inequality (or inequalities) is then the emergent result of a series of underlying processes. "Inequality is a choice between perfectly feasible alternatives in a world of multiple equilibria", Palma (2020) reminds us. The conclusion, as the title of Palma (2016) indicates, is that each country deserves the inequality it has.

FIGURE 7.The cyclical behavior of inequality, Chile (1850-2010)



Source: Rodríguez Weber (2017)

5. *Econometric strategy and results*

A VAR is a standard tool of macroeconomic research, which allows for estimating and tracking the short and long-term effects of different types of shocks: technological (Galí et al., (2003), monetary (Christiano et al. (2005, 2010)) or due to public expenditure (see Blanchard and Perotti (2002) Christiano et al. (2011) and Céspedes et al., (2013) specifically for the Chilean case).

The VAR approach has a number of advantages. Generally speaking, VARs represent a natural tool for economic practice. According to Christiano (2012) "*VARs are a fruitful way to organize data because they can be used as a sort of battle ground for testing alternative theories… Economists are accustomed to thinking about models in terms of impulses and propagation mechanisms, and VARs are a device for organizing the data precisely into these categories*".

Here the reduced form of a VAR (6) of three variables is estimated in order to obtain the statistics of interest:

$$(1) \qquad \boldsymbol{y}_t = \boldsymbol{c} + \boldsymbol{\Phi_1 y}_{t-1} + \boldsymbol{\Phi_2 y}_{t-2} + \cdots + \boldsymbol{\Phi_8 y}_{t-6} + \boldsymbol{\varepsilon}_t$$

Where $\boldsymbol{y}_t = \begin{pmatrix} p_t \\ g_t \\ i_t \end{pmatrix}$, and p_t, g_t e i_t correspond respectively to the variables (change of) political regime, measured by the first difference in the Polity index, the growth rate of GDP per capita in period t and inequality, measured by the Gini.

But a VAR by itself only describes the history of the statistical relationships between the variables. It does not allow us to draw conclusions about causal relationships or make some kind of direct causal inference.

To obtain conclusions with economic sense, to evaluate the effects of some policy shock or to be able to test different hypotheses, it is necessary to add identification assumptions. These assumptions establish a priori a causal chain of relationships between the VAR variables and therefore predefine which is the exogenous variable.

Thus, the first identification strategy - based on the Cholesky decomposition - consists in assuming that there is a definite causal chain that begins with the unexpected movement of the political variable. With this, the simultaneity bias present in systems of equations of this type is eliminated and orthogonal shocks are constructed that allow for isolating the effects of one variable on the others.

The IRFs as well as the variance decomposition are relevant statistics in their own right. They are capable of providing us with the empirical-historical regularities that underlie theoretical modeling and therefore are an object of natural interest for empirical research. In trying to find some interesting empirical regularities that can provide an insight into the underlying structure of the phenomenon we want to model, IRFs seem to be a natural starting point.

5.1 *A democratic shock*

For the analysis sustained up to now to be valid, we have assumed that, in a certain period, an exogenous variation occurs, which we classify as our policy variable. In this case, the exogenous variation represents a value that is very far from the best prediction based on a linear projection that uses the information available up to t-1.

What does this mean in terms of a historical narrative? It means that the change, or rather the magnitude of the change, in the political regime that occurred in 1973 and '88-'89,despite being partly explicable by the previous economic-political conditions, was very far from what was predictable based on that set of information.

Figures 8.a and 8.b show the residual series for the case of Chile and Argentina, which allows us to identify the shocks. The history of these residues also allows for the construction of a political-institutional history based on the unexpected political changes identified based on the residues.

Furthermore, for the Chilean case, it is possible to know that the shock to which the effects are to be traced corresponds to the unexpected positive change from '88-'89'and not to the democratic worsening that occurred in'73. None of the IRFs studied were shown to be significantly different from zero for the model applied to the period prior to 1988; therefore, the observed effects must be attributed to the positive democratic shock that occurred with the return to democracy.

This approach is different from the one typically used in the VAR macroeconomic literature that tracks the effects of shocks that are explicitly or implicitly assumed to be normally distributed. Here it is possible to isolate an unexpected movement of one of the variables to be modeled, through a combination of historical narrative and typical methods of time series in macroeconomics.

FIGURE 8a. Identifying a residual-based shock (Chile)

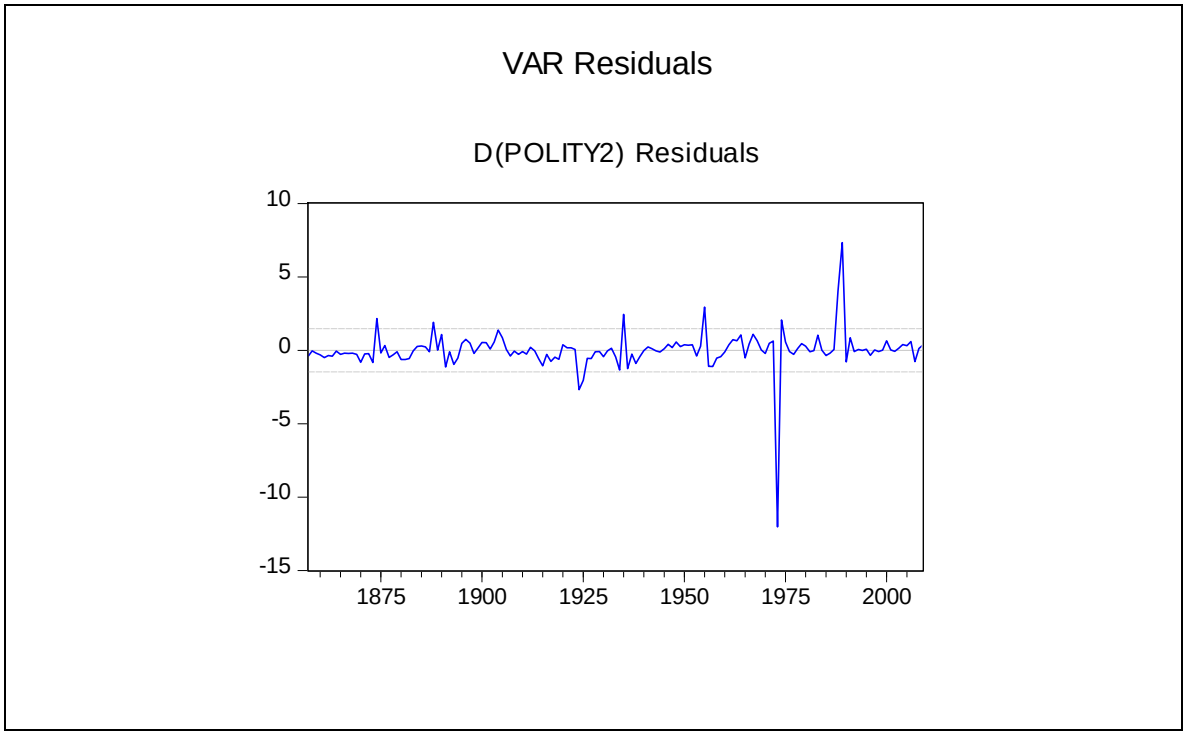
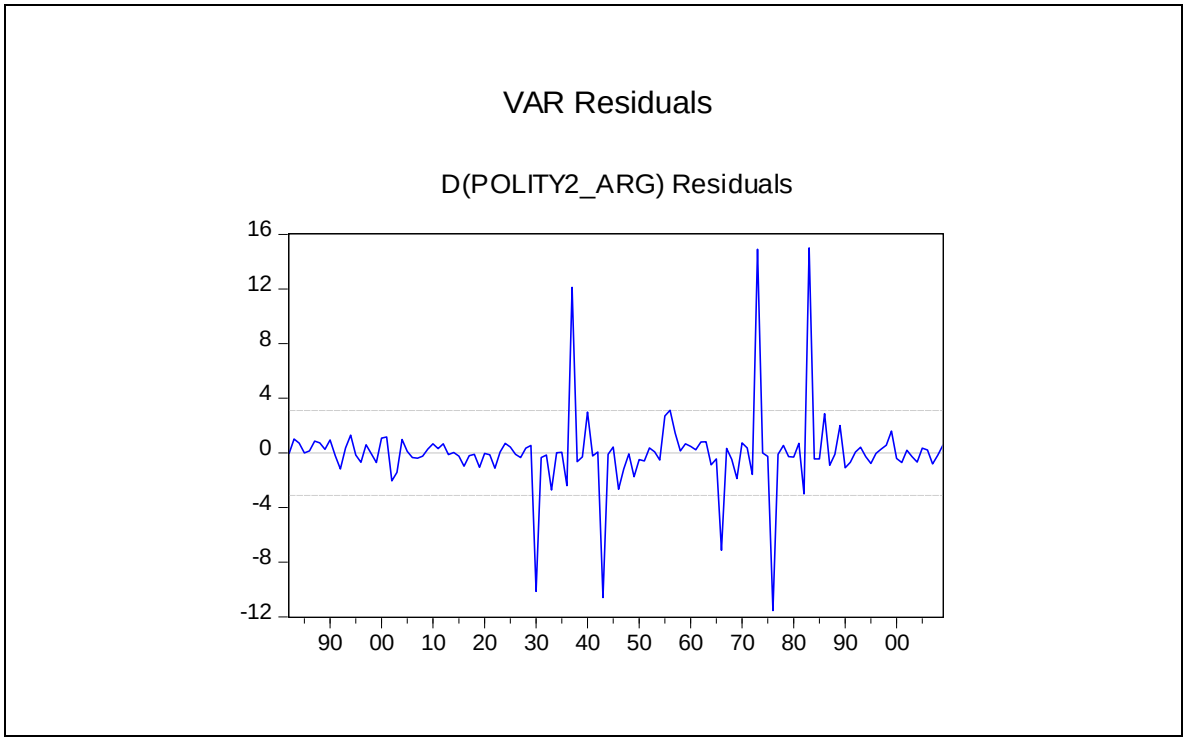


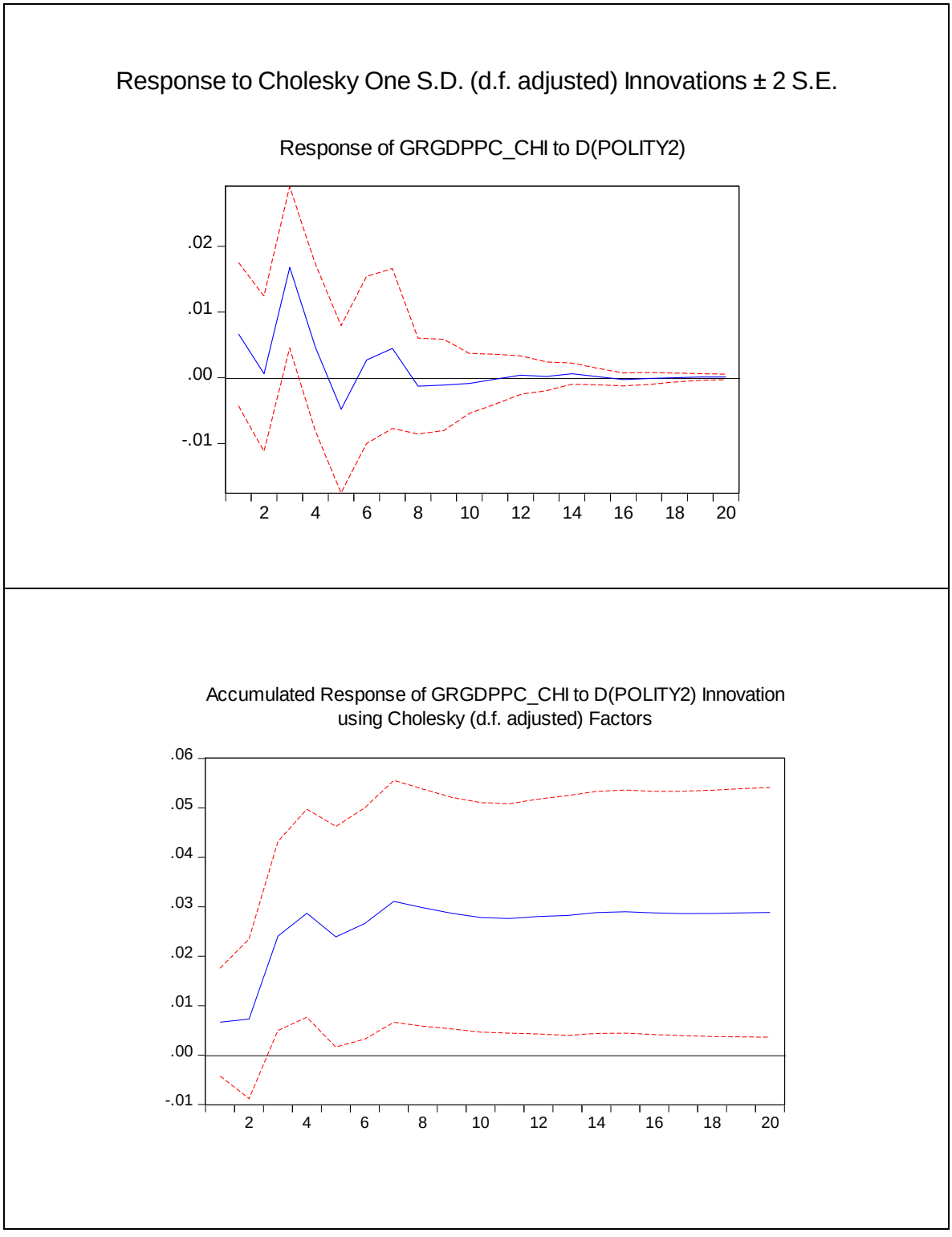
FIGURE 8b. Identifying a residual-based shock (Argentina)



5.2 Effects on economic growth

The long-term effect of democracy on GDP growth is 3 percentage points, reaching a peak after 7 years. The exogeneity assumption of a democratic shock is reinforced by the results of the Granger causality tests. The evidence of causality goes from the political regime to the growth in GDP per capita. This coincides with the results obtained through the GETS algorithm, where a minimum model is obtained in which the democratic variable meets the criteria of exogeneity with respect to the parameters associated with growth.

Figure 9. Short and long-term effects of a democratic shock on the growth rate of GDP per capita

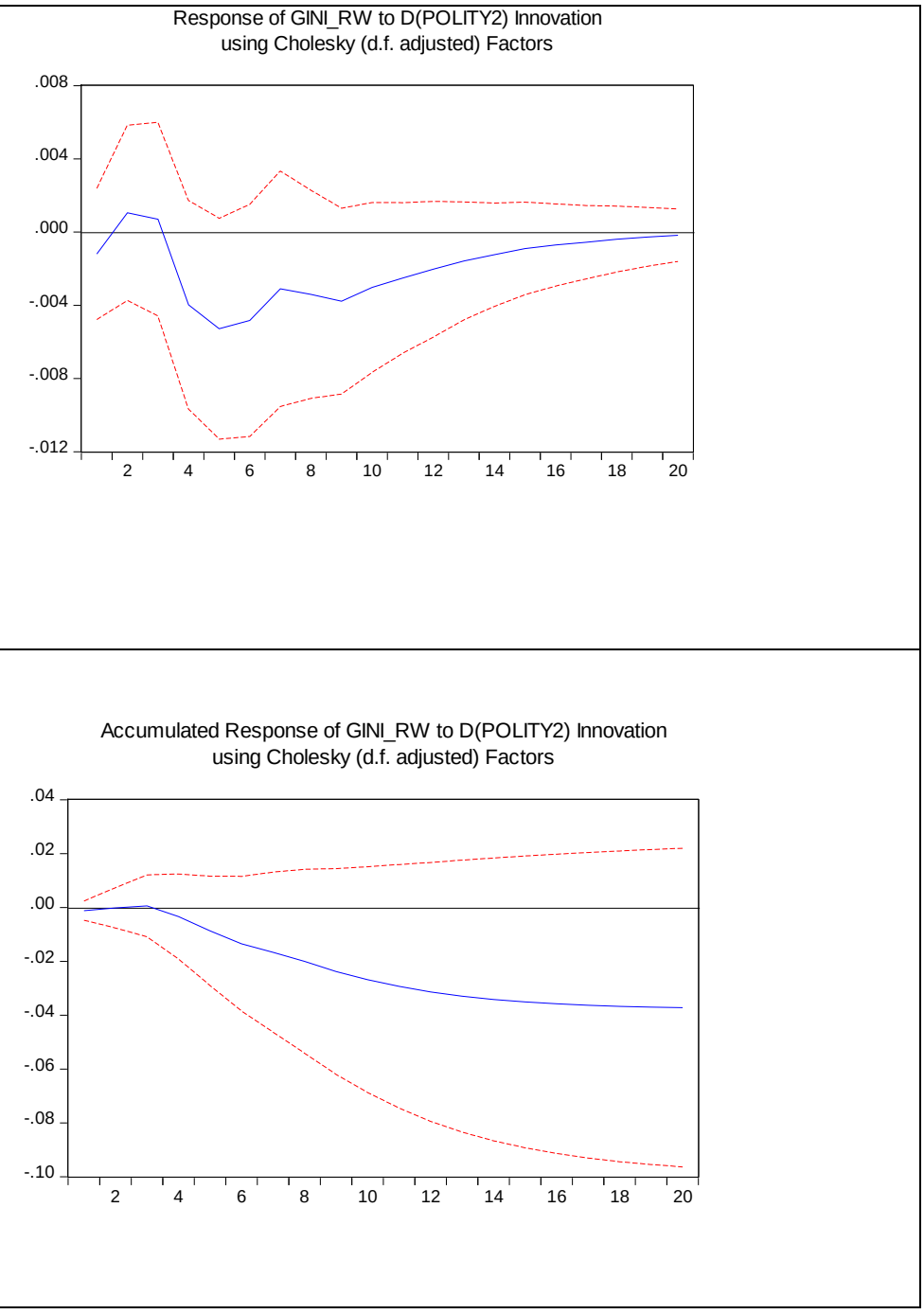


Another interesting characteristic is that the effect of democracy on the growth rate of GDP per capita takes 3 years to become positive, so there may be short-term costs or uncertainties that increase the possibility of failure of the reform processes.

5.3 Effects on inequality

The effect on inequality is estimated to be a decrease of 0.037 Gini points. As mentioned in a previous section, a characteristic of the Gini series for the Chilean case is that it is stationary, which indicates that it does not exhibit any trend and oscillates around its mean value (0.53). It is not clear whether the impact of democracy should be interpreted as an effective decrease with respect to the historical average or is, rather, a return to the said average after the sharp increases in inequality observed in the last years of the dictatorship.

FIGURE 10. Short and long-term effects of a democratic shock on inequality



5.3.1 The interdependence between democracy and inequality

Let us remember that we want to trace the economic consequences of the Chilean democratic shock of '88-'89. Despite this, the question arises as to the long-term relationship between democracy and inequality.

The Granger causality tests show that the relationship would go from inequality to democracy. If we specify a VAR and estimate the IRF assuming that inequality is exogenous with respect to democracy, we find a significant effect. This is confirmed by the GETS algorithm. The problem here is that it is not possible to identify which is the "inequality shock" that we want to analyze.

But it is interesting to verify this evidence for the Chilean case. Periods in which there are sudden or unexpected decreases in the levels of inequality somehow favor the appearance of a "conservative response" that is expressed in a less democratic political regime. This happened with the governments of Balmaceda (1886-1891) and Allende (1970-1973). And vice versa, when inequality (or the perception of it) reaches critical levels, the system's response materializes in a more democratic political system, as occurred in Chile just before the return into democracy and again in 2019. This evidence is consistent with the Political Economy approach and the arguments presented by Rodríguez Weber (2015, 2017) and Palma (2020) for the Chilean case and by López (2020) in terms of a theoretical model.

5.4 Robustness analysis of and possible channels

Thanks to the information available for the Chilean case, it is possible to estimate more flexible specifications of the VAR, including variables associated with human capital, physical capital and inflation, as well as fiscal variables that have been shown to be irrelevant. The results are robust to these specifications even when including the terms of trade, a variable usually associated with the Chilean economic cycle, and subtracting copper production from GDP.

The robustness exercises provide relevant information about the channels through which democracy impacts economic growth. The evidence seems to be consistent with interpreting the democratic shock analogously of a technological shock that, at the same time, increases the productivity of human capital and physical capital. This is consistent with the findings of Persson and Tabellini (2009), Acemoglu et al (2015, 2019), and Glaeser et al (2004) among others.

The results in the previous section are robust to a number of alternative specifications. The growth rate of the human capital index, the growth rate of the gross formation of fixed

capital per capita and the growth rate of the consumer price index (CPI) have been included, all of which were obtained from Díaz et al., (2016).

In this first alternative specification, the VAR considers the following variables:

$$\boldsymbol{y}_t = (\boldsymbol{y}_{1t}, \boldsymbol{y}_{2t}, \boldsymbol{y}_{3t}, \boldsymbol{y}_{4t}, \boldsymbol{y}_{5t}, \boldsymbol{y}_{6t})$$

Where:

$\boldsymbol{y_{1t}}$: GDP per capita growth (annual %)

$\boldsymbol{y_{2t}}$:First difference of the variable "Polity2"

$\boldsymbol{y_{3t}}$: Gini coefficient

$\boldsymbol{y_{4t}}$: Human capital index growth rate

$\boldsymbol{y_{5t}}$: Gross fixed capital formation (p/c) growth rate

$\boldsymbol{y_{6t}}$: Consumer price index growth rate

This model incorporates variables that must be considered in the growth analysis and that respond to the neoclassical approach to economic growth accounting (growth rates of physical capital and human capital) and the institutionalist and neo-institutionalist literature by incorporating the institutional variable that reflects the type of political regime and the Gini coefficient. This specification also allows for testing the effect of inflationary shocks on the long-term economic performance by incorporating the growth rate of the CPI. The specifications with fiscal variables (variation in per capita public spending, variation in the social spending / GDP ratio, and variation in taxes) do not alter the results obtained here and the AIRFs associated with the said variables turn out to be non-significant for our variables of interest. .

When changing the human capital index for the average schooling growth rate, the results remain basically the same: The AIRFs continue to replicate the results obtained in the initial model.

The next strategy is to use a VAR-X, that is, a VAR with a variable predefined as exogenous by the researcher. For a country that is historically dependent on international trade, it seems plausible to use the variation in the terms of trade as an exogenous variable. By incorporating the variation in the terms of trade, it is intended to control for a variable that is traditionally associated with the economic cycle for a small country that is highly dependent on its exports of raw materials and that is not capable of affecting the

price (and therefore the terms of exchange) systematically. When incorporating this variable, the long-term effect hardly varies.

We investigated some of the channels through which democratic improvement can impact growth and distribution. In fact, it is possible to interpret the democratic shock as a technological shock that increases the productivity of both human and physical capital. This is observed in IRFs that are consistent with a higher growth rate of the accumulation of physical capital and the remuneration of workers, in an environment of diminishing inequality.

6. Conclusions

For any specific time period, there are multiple factors that determine the possible equilibrium outcomes for a given socioeconomic system. Interactions in the economic dimension do not occur in a vacuum, nor are they simply embedded in a larger political system. Strictly speaking, there is a dynamic interdependence between the institutional structure determined through the political system and certain socioeconomic outcomes such as the growth rate of GDP per capita, inequality, tax rates, public spending, innovation, schooling, etc,. The institutional environment shapes the evolution of economic results and vice versa, in a circular and self-generated relationship.

Chile exhibits outstanding characteristics for analyzing the relationship between democracy and economic performance. Now, in the year 2021, it is on the verge of starting a new sociopolitical cycle, which has similarities and differences compared with another democratic milestone in Chile: the return in 1988-89 - through institutional means - to a democratic regime after the dictatorship of the period 1973-1988.

One of the interesting aspects of the Chilean case is that both processes were channeled institutionally, using only a pencil as the most revolutionary weapon.

In some way, the process associated with October 5, 1988 resonates in the shock of the social outbreak of 2019 that opened up the possibility for a new democratizing impulse. In both transitions, a high degree of uncertainty was observed regarding the evolution of the economic variables. This paper argues that there are good reasons for optimism regarding the results of the current process in terms of inequality and growth.

On the other hand, the findings of this work indicate that it is democracy, and not necessarily the (radical) pro-market policies, what is behind the remarkable economic performance in the Chilean case. The results indicate that the long-term consequences of the democratic shock of the '88-'90 period implied a higher growth rate of GDP per capita of the order of 3% compared to the hypothetical "counterfactual without democratic

shock". Likewise, a quite moderate decrease in inequality is observed, which indicates the main debt of the democratic promise in Chile.

7. *Bibliography*

Acemoglu, Daron. 2008. "Oligarchic versus Democratic Societies." J. European Econ. Assoc. 6 (1): 1–44

Acemoglu, D., Naidu, S., Restrepo, P., Robinson, J.A., 2015. "Democracy, redistribution, and inequality." *Handbook of Income Distribution*, Vol. 2. (1), Elsevier, pp. 1885–1966.

Arancibia Clavel, Patricia and de la Maza, Isabel (2003) "Matthei: Mi testimonio", *La Tercera Mondadori, 2003*.

BBC (January, 2019) ¿Es realmente el milagro económico de Chile una herencia de Pinochet? https://www.bbc.com/mundo/noticias-46788932

Blanchard, Olivier and Robert Perotti (2002) "An Empirical Characterization Of The Dynamic Effects Of Changes In Government Spending And Taxes On Output," *Quarterly Journal of Economics*, 2002, v107(4,Nov), 1329-1368.

Céspedes, L.F & Fornero, J., & Gelí, J. (2013) "Non-Ricardian Aspects of Fiscal Policy in Chile," Central Banking, Analysis, and Economic Policies Book Series, in: Luis Felipe Céspedes & Jordi Galí (ed.),*Fiscal Policy and Macroeconomic Performance*, edition 1, volume 17, chapter 8, pages 283-322, Central Bank of Chile.

Chang, Ha-Joon, (2011), "Institutions and economic development: theory, policy and history," Journal of Institutional Economics, Cambridge UniversityPress, vol. 7(04), pp. 473-498.

Christiano, Lawrence J. & Eichenbaum, Martin and Charles L. Evans (2005) "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy", *Journal of Political Economy*, Vol. 113, No. 1 (February 2005), pp. 1-45 (45 pages)

Christiano, Lawrence J. & Trabandt, Mathias & Walentin, Karl, (2010). "DSGE Models for Monetary Policy Analysis," *Handbook of Monetary Economics*, in: Benjamin M. Friedman & Michael Woodford (ed.), Handbook of Monetary Economics, edition 1, volume 3, chapter 7, pages 285-367 Elsevier.

Christiano, L., M. Eichenbaum, and S. Rebelo (2011): "When Is the Government Spending Multiplier Large?," *Journal of Political Economy*, 119(1), 78–121.

Christiano, L.J (2012) “Christopher A. Sims and Vector Autoregressions”, *The Scandinavian Journal of Economics*, Vol. 114, Issue 4, pp. 1082-1104, 2012

Correa Sutil, Sofía. 2005. Con las riendas del poder. La derecha chilena en el siglo xx. Santiago: Editorial Sudamericana.

Díaz, J., Luders, R., Wagner, G. “Chile 1810-2010, La república en cifras”. Ediciones UC, Santiago, 2016

Ffrench-Davis, Ricardo (2014) "Chile entre el neoliberalismo y el crecimiento con equidad: cuarenta años de políticas económicas y sus lecciones para el futuro”, Juan Carlos Sáez Editor.

Galí, J.,& Lopez-Salido, J. D., & Valles, J., (2003) "Technology shocks and monetary policy: assessing the Fed's performance," *Journal of Monetary Economics*, Elsevier, vol. 50(4), pages 723-743

Glaeser, E., R. La Porta, F. Lopez-de-Silanes, and A. Shleifer (2004), ‘Do Institutions Cause Growth?’, *Journal of Economic Growth*, 9(3): 271–303.

Londregan, J.B., 2000. Legislative Institutions and Ideology in Chile. Cambridge University Press, New York, NY.

López, R. (2020). “Economics and Politics: A Unifying Framework”, Serie Documentos de Trabajo, No. 496, junio 2020. Departamento de Economía, Universidad de Chile.

Milanovic, B., Lindert, P., and Williamson J. G. (2011) “Pre-industrial inequality”. *The Economic Journal*, Vol. 121, No. 551, pp. 255-272

Palma, J. G. (2016) “Do nations just get the inequality they deserve? The 'Palma Ratio' re-examined”, (2016) CWPE1627.

Palma, J. G. (2021) “Por qué los ricos siempre siguen siendo ricos (pase lo que pase, cueste lo que cueste), *Revista CEPAL - Edición Especial N°132.*

Persson, T., & Tabellini, Guido, (2009). "Democratic Capital: The Nexus of Political and Economic Change," American Economic Journal: Macroeconomics, American Economic Association, vol. 1(2), pages 88-126

Przeworski, Adam and Limongi, Fernando (1993) “Political Regimes and Economic Growth”, *The Journal of Economic Perspectives*, Vol. 7, No. 3 (Summer, 1993), pp. 51-69

Rajan, Raghuram (2009) "Rent Preservation and the Persistence of Underdevelopment", *American Economic Journal: Macroeconomics*, Vol. 1, No. 1 (January 2009), pp. 178-218.

Rodríguez Weber, Javier (2017). "Desarrollo y desigualdad en Chile (1850-2009). Historia de su economía política. Santiago de Chile, . Centro de Investigaciones Diego Barros Arana

Sen, Amartya, 1933-. Development as Freedom. New York :Anchor Books, 2000.

Siavelis, P.M., 2000. The President and Congress in Post-Authoritarian Chile: Institutional Constraints to Democratic Consolidation. Pennsylvania State University Press, University Park, PA.

Milanovic, Branko., Van Der Weide, Roy (2014) "Inequality is bad for the growth of the por (but not for that of the rich)", *Policy Research Working Paper Series* 6963, The World Bank.

8. Annex

1988 Plebiscite Polls (Sorted by date of completion)

Surveycompany	Date	Sí	No	Undecided	Blank/invalid
CED / FLACSO	June-1987	12,4 %	**47,3 %**	40,3 %	-
CERC	November-1987	31,1 %	**40,3 %**	18,2 %	-
Gallup	December-1987	**39,4 %**	26,6 %	34 %	-
Diagnos	March-1988	20 %	**38 %**	30 %	-
CEP / Adimark	June-1988	37 %	**41 %**	22 %	-
FLACSO	June-July-1988	17,3 %	**42,1 %**	33 %	7,7 %
CERC	August-1988	30,8 %	**40,6 %**	22 %	8,4 %
CIS	Ausgust-1988	20,1 %	**43,4 %**	33,6 %	3 %
Univisión	September-1988	26 %	**61 %**	-	-
CEP	September-1988	27 %	**45 %**	23 %	5 %
FACEA, U. Chile	September - 1988	**48,1%**	41%	11%	-
CEP / Adimark	October - 1988	32 %	**52 %**	16 %	-
Skopus	October - 1988	**53,9 %**	46,1 %	-	-
CERC	October - 1988	19,6 %	**47 %**	22 %	-
CIS	October - 1988	17,9 %	**46,8 %**	33,4 %	-
Gallup (predicción)	October - 1988	**47 %**	42 %	-	-
Gemines (predicción)	October - 1988	31 %	**58,6 %**	-	-
PDI (predicción)	October - 1988	**53,25 %**	46,75 %	-	-

Spurces: Cañas (2012), Revista Cauce (1988), CEP (1988).